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DESCRIPTION CN103159178A

A method for preparing sodium chlorite

[0001]

Technical Field

[0002]

This invention relates to a method for preparing sodium chlorite for industrial bleaching.

[0003]

Background Technology

[0004]

Sodium chlorite is an oxidant widely used in bleaching, environmental disinfection and other industries. The current production process involves mixing a saturated sodium chlorate solution with 27.5% hydrogen peroxide and 95% sulfuric acid to generate chlorine dioxide gas. Then, the chlorine dioxide gas is passed into a mixed solution of hydrogen peroxide and sodium hydroxide to react and generate sodium chlorite. Because this reaction process uses concentrated sulfuric acid of more than 95%, the reaction is violent and can easily cause danger. In addition, the cost is high, making it unsuitable for industrial applications.

[0005]

Summary of the Invention

[0006]

The main objective of this invention is to overcome the shortcomings of existing methods for preparing sodium chlorite and to provide a novel method for preparing sodium chlorite that makes the sodium chlorite preparation process easy to control, has a low risk factor, and is inexpensive, thus making it more suitable for practical use and having industrial application value.

[0007]

The objective of this invention and the technical problem it solves are achieved by the following technical solutions.

According to the present invention, a method for preparing sodium chlorite includes the following steps:

[0008]

(1) Sodium chlorate solution reacts with hydrochloric acid to produce chlorine dioxide gas and chlorine gas;

[0009]

(2) Chlorine dioxide gas and chlorine gas are passed into sodium chlorite solution to further react and generate chlorine dioxide gas;

[0010]

(3) Pass chlorine dioxide gas into sodium hydroxide solution and add hydrogen peroxide at the same time to react and generate sodium chlorite;

[0011]

(4) Crystallize and dry the sodium chlorite prepared in step (3) to obtain the final product.

[0012]

The aforementioned method for preparing sodium chlorite is characterized in that the concentration of sodium chlorite solution in step (1) is 25%~33%.

[0013]

The aforementioned method for preparing sodium chlorite is characterized in that the concentration of hydrochloric acid solution in step (1) is 31%.

[0014]

In the aforementioned method for preparing sodium chlorite, the molar ratio of hydrochloric acid to chlorite in step (1) is 1~1.5:2.

[0015]

By employing the above technical solution, the method for preparing sodium chlorite of the present invention has at least the following advantages:

[0016]

The method for preparing sodium chlorite in this invention does not use concentrated sulfuric acid with a concentration of 95% or higher. The reaction process is easy to control, the reaction is not violent, the safety factor is higher, and the cost is lower and the yield is higher, making it suitable for large-scale industrial applications.

[0017]

The above description is merely an overview of the technical solution of the present invention. In order to better understand the technical means of the present invention and to implement it in accordance with the contents of the specification, the preferred embodiments of the present invention are described in detail below.

[0018]

Detailed Implementation

[0019]

To further illustrate the technical means and effects adopted by the present invention to achieve the intended purpose, the specific implementation methods, features and effects of the sodium chlorite preparation method proposed according to the present invention are described in detail below.

[0020]

Example 1

[0021]

The preparation method of this invention involves first adding 31% hydrochloric acid to a 25% sodium chlorate solution, with a molar ratio of hydrochloric acid to sodium chlorate solution of 1.1:2. The resulting mixture of chlorine dioxide and chlorine gas is then passed into an excess of a 25% sodium chlorite aqueous solution, with a molar ratio of chlorine gas to sodium chlorite of 1:2.2. The chlorine gas reacts with the sodium chlorite to produce chlorine dioxide. Finally, the chlorine dioxide gas is passed into a 32% sodium hydroxide solution, and 27.5% hydrogen peroxide is added simultaneously to react and produce sodium chlorite, with a molar ratio of chlorine dioxide, sodium hydroxide, and hydrogen peroxide of 2:2:1. The mixture is then crystallized and dried to produce 91% solid sodium chlorite.

[0022]

Example 2

[0023]

The preparation method of this invention involves first adding 31% hydrochloric acid to a 30% sodium chlorate solution, with a molar ratio of hydrochloric acid to sodium chlorate solution of 1.1:2. The resulting mixture of chlorine dioxide and chlorine gas is then passed into an excess of a 25% sodium chlorite aqueous solution, with a molar ratio of chlorine to sodium chlorite of 1:2.4. The chlorine gas reacts with the sodium chlorite to generate chlorine dioxide. Finally, the chlorine dioxide gas is passed into a 32% sodium hydroxide solution, and 27.5% hydrogen peroxide is added simultaneously to generate sodium chlorite, with a molar ratio of chlorine dioxide, sodium hydroxide, and hydrogen peroxide of 2:2:1. The mixture is then crystallized and dried to produce 91% solid sodium chlorite.

[0024]

The technological innovation of the method for preparing sodium chlorite of the present invention with the above-described structure has many merits for those skilled in the art and is indeed a technological advancement.

[0025]

The above description is merely a preferred embodiment of the present invention and is not intended to limit the present invention in any way. Although the present invention has been disclosed above with reference to preferred embodiments, it is not intended to limit the present invention. Any person skilled in the art can make some modifications or alterations to the above-disclosed technical content to create equivalent embodiments without departing from the scope of the present invention. Any simple modifications, equivalent changes, and alterations made to the above embodiments based on the technical essence of the present

invention without departing from the scope of the present invention shall still fall within the scope of the present invention.
